

Amendments to the Claims

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

PLEASE SEE AMENDMENT C FOR CHANGES TO CLAIMS.

Claims 1-31 (canceled).

Claim 32 (currently amended): A method for producing zinc sulfide electroluminophores comprising:

a. preparing a fine-grain zinc sulfide by precipitating zinc sulfide from solutions of zinc salts and H₂S;

b. mixing the obtained fine-grain zinc ~~sulfate~~ sulfide.

with activator and coactivator compounds to form luminophores;

c. firing the obtained mixtures in a temperature range of from 800 to 1000°C in the presence of fluxing agents selected from the group consisting of fluorides, bromides, iodides, and mixtures thereof to obtain a powdery electroluminophore;

d. treating the powdery electroluminophores with acid selected from the group consisting of organic acids, inorganic acids, and mixtures thereof in an acid bath while stirring.

Claim 33 (previously presented): The method according to claim 32 further comprising washing, neutralizing, and optionally filtering and drying the zinc sulfide electroluminophores.

Claim 34 (previously presented): The method according to claim 32 wherein fine-grain zinc sulfide is precipitated by passing H₂S into a solution of zinc salt.

Claim 35 (previously presented): The method according to claim 34 wherein the zinc salt solution is selected from the group consisting of solutions of ZnSO₄, Zn(NO₃)₂ and ZnCl₂.

Claim 36 (previously presented): The method according to claim 34 wherein the zinc ion concentrations in the zinc salt solutions ranges from 0.25 moles/L to 2.0 moles/L at temperatures between 20 and 80°C and a pH of 0.5 to 3.0.

Claim 37 (previously presented): The method according to claim 32 wherein the activator and coactivator compounds are mixed with the zinc sulfide during precipitation of the fine grain zinc sulfide or immediately after the precipitation is completed.

Claim 38 (previously presented): The method according to claim 32 wherein the activator and coactivator compounds are blended together in dry form, initially with a

portion of the fine-grain zinc sulfide obtained from the precipitation step, and then this mixture combined with the remaining amount of fine-grain zinc sulfide.

Claim 39 (previously presented): The method according to claim 37 wherein the added activator and coactivator compounds are selected from the group consisting of copper sulfate, tetrachloroauric acid, the sodium salt of tetrachloroauric acid, manganese sulfate, aluminum nitrate, and mixtures thereof.

Claim 40 (previously presented): The method according to claim 32 wherein a slightly mineralizing fluxing agent selected from the group consisting of fluorides, bromides, iodides, and mixtures thereof, is added to the starting mixture for the firing process, which fluxing agent contains cationic components that act as coactivators.

Claim 41 (previously presented): The method according to claim 40 wherein the firing in step (c) takes place in air or in an inert nitrogen atmosphere or in an atmosphere consisting of a gas mixture of nitrogen and 1 to 10% hydrogen.

Claim 42 (previously presented): The method according to claim 41 wherein the obtained fired material is cooled to room temperature after completing of the firing

step, washed with deionized water, and optionally filtered and dried.

Claim 43 (previously presented): The method according to claim 34 wherein the acid treatment in step (d) takes place in an acid bath with acids selected from the group consisting of organic acids and inorganic acids, with retention times of 10 minutes to 10 hours at temperatures between 20 and 60°C.

Claim 44 (previously presented): The method according to claim 43 wherein the acids are selected from the group consisting of acetic acid, citric acid, hydrochloric acid, nitric acid, and sulfuric acid.

Claim 45 (previously presented): The method according to claim 44 wherein the acid treatment takes place with approximately 37% HCl solution for 2 to 6 hours while stirring at room temperature.

Claim 46 (previously presented): The method according to claim 44 wherein the acid treatment takes place with a citric acid solution of 10 to 20% citric acid for 4 to 8 hours at 60°C with stirring.

Claim 47 (previously presented): The method according to claim 33 wherein after the zinc sulfide is washed, neutralized and optionally filtered and dried, the

zinc sulfide is re-doped with the activator and coactivator compounds.

Claim 48 (previously presented): The method according to claim 47 wherein the re-doping is effected with compounds selected from the group consisting of copper compounds, gold compounds, manganese compounds, and mixtures thereof as activator compounds, and aluminum compounds as coactivator compounds.

Claim 49 (previously presented): The method according to claim 47 wherein the compounds used for re-doping are selected from the group consisting of copper sulfate, tetrachloroauric acid, sodium salt of tetrachloroauric acid, sulfate, aluminum nitrate, and mixtures thereof.

Claim 50 (previously presented): The method according to claim 47 wherein re-doping takes place by firing at a temperature of from 320°C to 800°C for a period of from 32 minutes to 10 hours.

Claim 51 (previously presented): The method according to claim 47 wherein re-doping takes place in air or in an inert nitrogen atmosphere consisting of a mixture of nitrogen and 1 to 10% hydrogen.

Claim 52 (previously presented): The method according to claim 47 wherein the fired zinc sulfide is cooled to room temperature, washed with a solution selected from the

group consisting of mineral acids, KCN, and mixtures thereof to remove any activator or coactivator materials that may have precipitated onto the surface of the zinc sulfide electroluminophores.

Claim 53 (previously presented): The method according to claim 52 wherein the zinc sulfide electroluminophores are washed to pH neutrality with deionized water and subsequently filtered and dried.

Claim 54 (previously presented): The method according to claim 34 wherein the electroluminophores produced are annealed at a temperature in the range of from 200 to 500°C for a period of from 32 minutes to five hours.

Claim 55 (previously presented): The method according to claim 54 wherein the annealing takes place in air or in an inert nitrogen atmosphere or in an atmosphere consisting of a mixture of nitrogen and 1 to 10% hydrogen.

Claim 56 (previously presented): Zinc sulfide electroluminophores which have a cubic crystal structure and average grain sizes of from 2 to 5 microns.

Claim 57 (currently amended): Zinc sulfide electroluminophores comprising zinc sulfide, activator compounds, and coactivator compounds, which electroluminophores have a cubic crystal structure and average grain sizes of from 5 to 15 microns.

Claim 58 (currently amended): The zinc sulfide electroluminophores according to claim 56 wherein the particles comprise zinc sulfide, activator compounds, and coactivator, compounds wherein the particles are coated with a protective layer of a substance selected from the group consisting of organic, crystalline inorganic, amorphous inorganic, and mixtures thereof.

Claim 59 (previously presented): The zinc sulfide electroluminophore according to claim 58 wherein the protective layer consists of an inner metal oxide film and an outer silicon nitrate film.

Claims 60-63 (canceled).

Claim 64 (previously presented): Zinc sulfide crystals prepared by the method according to claim 32.

Claim 65 (new): The zinc sulfide electroluminophores according to claim 57, wherein the particles are coated with a protective layer of a substance selected from the group consisting of organic, crystalline organic, amorphous organic, and mixtures thereof.

Claim 66 (new): Zinc sulfide electroluminophores comprising zinc sulfide, activator compounds, and inactivator compounds, wherein the electroluminophores have a cubic crystal structure and average grain sizes of from 2 to 5 microns.

Claim 67 (new): Zinc sulfide electroluminophores prepared according to the process of claim 32, which have a cubic crystal structure and average grain sizes of from 2 to 5 microns.

Claim 68 (new): Zinc sulfide electroluminophores prepared according to claim 32, which have a cubic crystal structure and average grain sizes of from 5 to 15 microns.